



# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: IECEx PTB 10.0020

Issue No: 4

Certificate history:

Status: **Current**

Issue No. 4 (2018-11-30)

Issue No. 3 (2016-10-10)

Date of Issue: **2018-11-30**

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Issue No. 2 (2014-01-02)

Issue No. 1 (2012-12-17)

Issue No. 0 (2010-06-23)

Applicant: **Wandfluh Hydraulik + Elektronik AG**  
Helkenstrasse 13  
3714 Frutigen  
**Switzerland**

Equipment: **Solenoid type MKY45/18x60-\*/L\* \* \* \* \***

Optional accessory:

Type of Protection: **Flameproof Enclosures "db", Protection by Enclosure "tb"**

Marking:

Ex db IIC T6, T4 Gb  
Ex tb IIIC T80°C, T130°C Db

Approved for issue on behalf of the IECEx  
Certification Body:

Dr.-Ing. Detlev Markus

Position:

Head of Department Explosion Protection in Energy Technology

Signature:  
(for printed version)

Date:

30.11.18

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

**Physikalisch-Technische Bundesanstalt (PTB)**  
Bundesallee 100  
38116 Braunschweig  
Germany





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Manufacturer: **Wandfluh Hydraulik + Elektronik AG**  
Helkenstrasse 13  
3714 Frutigen  
**Switzerland**

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

## STANDARDS:

The apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

<b>IEC 60079-0 : 2017</b> Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
<b>IEC 60079-1 : 2014-06</b> Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
<b>IEC 60079-31 : 2013</b> Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

## TEST & ASSESSMENT REPORTS:

*A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in*

Test Report:

[DE/PTB/ExTR10.0020/04](#)

Quality Assessment Report:

[CH/SEV/QAR16.0001/02](#)



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## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

The solenoid type MKY45/18x60-\*/L\* \* \* \* \* #\*, in the types of protection Flameproof Enclosure "db" and Protection by Enclosure "tb" is used for valve operation. It consists of a steel enclosure and the coil. The enclosure is closed with a cover screw in five different variants. For protection against corrosion the solenoid can be coated with a zinc-nickel-coating or and can be built into a box out of stainless steel. Connection is by means of a – separately certified – direct cable entry or a – separately certified – conduit system.

Technical Data, Nomenclature and Notes for manufacturing and operation: see Attachment.

**SPECIFIC CONDITIONS OF USE: NO**



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## **DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):**

- 1) For protection against corrosion the solenoid can be optionally built into a box out of stainless steel.
- 2) The cover screw is produced in five different variants.
- 3) The minimum rated power is reduced.
- 4) New test according IEC 60079-0:2017, IEC 60079-1:2014 and IEC 60079-31:2013.

## **Annex:**

[COCA-10.0020-Issue 4.pdf](#)



Applicant: Wandfluh Hydraulik + Elektronik AG  
Helkenstrasse 13  
3714 Frutigen  
Switzerland

Electrical Apparatus: Solenoid type MKY45/18x60-\*/L\* \* \* \* \* #\*

### Description

The solenoid type MKY45/18x60-\*/L\* \* \* \* \* #\*, in the types of protection Flameproof Enclosure "db" and Protection by Enclosure "tb" is used for valve operation. It consists of a steel enclosure and the coil. The enclosure is closed with a cover screw in five different variants. For protection against corrosion the solenoid can be coated with a zinc-nickel-coating or and can be built into a box out of stainless steel. Connection is by means of a – separately certified – direct cable entry or a – separately certified – conduit system.

### Technical data

Rated voltage	Temperature class/ Surface temperature	Rated power	M238 T <sub>amb</sub>	M224 T <sub>amb</sub>	Standard T <sub>amb</sub>
12 to 19 VDC	T4, T130 °C	≤ L9	-60 °C to +80 °C	-40 °C to +80 °C	-25 °C to +80 °C
		L12	-60 °C to +70 °C	-40 °C to +70 °C	-25 °C to +70 °C
		L15	-60 °C to +60 °C	-40 °C to +60 °C	-25 °C to +60 °C
		L18	-60 °C to +50 °C	-40 °C to +50 °C	-25 °C to +50 °C
		L21	-60 °C to +40 °C	-40 °C to +40 °C	-25 °C to +40 °C
20 to 230 VDC 24 to 230 VAC	T4 T130 °C	L12	-60 °C to +80 °C	-40 °C to +80 °C	-25 °C to +80 °C
		L15	-60 °C to +70 °C	-40 °C to +70 °C	-25 °C to +70 °C
		L18	-60 °C to +60 °C	-40 °C to +60 °C	-25 °C to +60 °C
		L21	-60 °C to +50 °C	-40 °C to +50 °C	-25 °C to +50 °C

Rated voltage	Temperature class/ Surface temperature	Rated power	M238 T <sub>amb</sub>	M224 T <sub>amb</sub>	Standard T <sub>amb</sub>
12 to 19 VDC	T4 T130 °C	≤ L6	-60 °C to +90 °C	-40 °C to +90 °C	-25 °C to +90 °C
		≤ L8	-60 °C to +80 °C	-40 °C to +80 °C	-25 °C to +80 °C
	T6 T 80 °C	≤ L6	-60 °C to +40 °C	-40 °C to +40 °C	-25 °C to +40 °C
		≤ L8	-60 °C to +40 °C	-40 °C to +40 °C	-25 °C to +40 °C
20 to 230 VDC 24 to 230 VAC	T4 T130 °C	≤ L6	-60 °C to +100 °C	-40 °C to +100 °C	-25 °C to +100 °C
		≤ L9	-60 °C to +90 °C	-40 °C to +90 °C	-25 °C to +90 °C
	T6 T 80 °C	≤ L6	-60 °C to +40 °C	-40 °C to +40 °C	-25 °C to +40 °C
		≤ L9	-60 °C to +40 °C	-40 °C to +40 °C	-25 °C to +40 °C
Ingress protection			IP65, IP66, IP67, IP68 and IP69K in accordance with EN 60529		

#### Variants of the cover screw

Cover screw standard	Article number 239.2119
Cover screw standard in K9, AISI316L	Article number 239.2125
Cover screw cable gland from the top, M254	Article number 212.2693
Cover screw prop M248	Article number 239.2120
Cover screw prop M248 in K9, AISI316L	Article number 239.2126

#### Nomenclature

M	K	Y	45	/18x60	-**	/L*	*	*	*	*	#*
1	2	3	4	5	6	7	8	9	10	11	12

1. Type solenoid for mobile use
2. Electrical connection, terminal box
3. Type of protection Flameproof Enclosure "d"
4. Size, Width in mm
5. Armature tube, inside diameter x clamping in mm
6. Rated voltage, V  
G = DC, R = AC
7. Rated power, W
8. Thread of cable entry  
no specification = M20x1,5  
-M187 = 1/2" NPT



9. Corrosion protection

no specification = zinc nickel (galvanic)

-K9 = AISi 316L Aussenhaut (box out of stainless steel)

10. Index of special features

no specification = minimum ambient temperature -25 °C (standard)

-M224 = minimum ambient temperature -40 °C

-M238 = minimum ambient temperature -60 °C

-M248 = integrated amplifier electronics and prop.cover screw

-M254 = cable gland from the top through the cover screw

-M256 = spark extinction diode

-M264 = suppression diode

11. Index of countries

no specification = Europe, ATEX, IECEx & EAC

/Aus = Australia

/IM = Brazil, INMETRO

/MA = China mining "MA"

/NP = China NEPSI

12. #\* = Index of modification

### Notes for manufacturing and operation

Each solenoid must be provided on the line side with a short-circuit protection in the form of a fuse designed to meet the solenoid current rating (max.  $3I_{rated}$  in compliance with IEC 60127-2-1) or a thermal overload trip with instantaneous short-circuit and thermal release (adjusted to match the current rating). For details, see instructions for operation.

The solenoid must be connected by means of suitable cable glands or conduit systems, which meet the requirements of EN 60079-1, sections 13.1 and 13.2, and for which a separate examination certificate has been issued.

Cable glands and sealing plugs of simple design must not be used. Should the solenoid be connected by means of a conduit gland which has been approved for this purpose, the required sealing device has to be provided immediately at the terminal box.